COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

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January 11, 2018

TO: Each Supervisor

FROM: Mark Pestrella
Director of Public Works

BOARD MOTION OF AUGUST 1, 2017, AGENDA ITEM 3
COOL ROOFS ORDINANCE DEVELOPMENT

The Board of Supervisors directed the Department of Public Works, in coordination with the Department of Regional Planning, the Chief Sustainability Officer, and the Department of Public Health, to:

1. Undertake a public engagement process with interested stakeholders, including those from environmental groups, the building and roofing industries, labor organizations, ratepayer advocates, and others, to solicit feedback on an ordinance amending the County of Los Angeles Building Code to require installation of cool roofs.

2. Draft an ordinance that would require utilization of cool roofs for new building construction, building additions, and major roof replacements in the unincorporated areas of Los Angeles County. The ordinance may provide exceptions for certain types of roof repairs, photovoltaic roofs, or roof replacements of less than some to-be-determined portion of roof area.

3. Confer with Southern California Edison and Los Angeles Community Choice Energy to assess the feasibility of providing cool roof rebates for Los Angeles County ratepayers to assist with the transition to cool roofs if it is determined that cool roofs are more costly than standard roofing materials.

4. Undertake a public education effort to generate awareness of the availability and benefits of cool roofing materials.

5. Return to the Board within 120 days with a recommended ordinance for consideration by the Board.

Public Engagement

In response to the Board's initiative and to elevate the level of cool roof compliance, a draft Cool Roof Ordinance was developed that considers both new construction and alterations for all types of buildings. In coordination with the Chief Sustainability Officer, Public Health, and Regional Planning, Public Works developed a cool roof stakeholders list. In October 2017, stakeholders were contacted and asked to provide comments and feedback on the draft Cool Roof Ordinance. The outreach included providing copies of the draft ordinance and the cost-effectiveness study. The stakeholder group was comprised of individuals from the following sectors: Environmental (12), Manufacturing (13), Building Industry (4), Labor (4), Utilities (2), Public Agencies (43), Ratepayer Advocates (2), BizFed (2), and Others (6).

On January 9, 2018, Public Works hosted a webinar and all cool roof stakeholders were invited to participate and provide additional feedback on the draft ordinance.

Proposed Ordinance

Currently, State and local laws are limited in the requirement to implement cool roof materials. Additionally, under the current County of Los Angeles Green Building Standards Code, cool roof regulations are voluntary for most projects. The Cool Roof Ordinance as drafted would amend the 2017 County of Los Angeles Green Building Standards Code to require cool roof materials be installed on all new construction and substantial remodels.

The Cool Roof Ordinance will align the County with other local jurisdictions, such as the Cities of Los Angeles, Santa Monica, and Pasadena.

The majority of comments received from stakeholders were supportive of our efforts to expand cool roof regulations to all types of buildings while allowing exceptions for repairs and minor remodels. Based on feedback received to date, the draft ordinance was revised and stakeholder suggestions and concerns were incorporated. The final draft ordinance provides exceptions for certain types of roof repairs, photovoltaic roofs, and partial roof replacements. This proposed ordinance is in alignment with many of the Board's initiatives to address the effects of climate change. If the Board chooses to move forward to adopt the ordinance, a public hearing will be held to give stakeholders additional opportunity to provide input.

Feasibility of Cool Roof Rebates

Public Works held discussions with representatives from Southern California Edison and Southern California Gas Company to finalize cost-effectiveness study information and get direct feedback on feasibility of a potential rebate program. Both agencies indicated a rebate program to incentivize the installation of cool roof materials is unlikely. In addition, we spoke with a representative from Los Angeles Community Choice Energy and were informed that they are in the early stages of customer enrollment and are not currently offering cool roof rebates. However, they will be exploring opportunities once they have completed their enrollment program, which is scheduled to be completed later this year.

A cost-effectiveness study for cool roofs has been provided by the California Statewide Utility Codes and Standards Program. The study indicates that the installation of cool roofs is cost-effective for most projects in most of the Climate Zones within the unincorporated County area, except for steep-sloped roofs in Climate Zone 16 (mountainous).

Public Education

Public education efforts will occur leading up to the Board's consideration of the ordinance and will continue should it be adopted. A webinar was held on January 9, 2018, to provide additional information on the draft ordinance and to receive additional stakeholder input. A pamphlet outlining the requirements of the ordinance and general information on cool roof materials will be developed and placed at our Building and Safety public counters and on our website.

Recommended Ordinance

The draft ordinance is attached and is expected to be presented to the Board for consideration in May 2018.

If you have any questions, please contact Rossana D'Antonio at (626) 458-4004 or rdanton@dpw.lacounty.gov.

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P:\joann\cool roofs motion report R5 01-08-18

Attach.

cc: Chief Executive Office (Chia-Ann Yen, Gary Gero)
Executive Office
Department of Public Health
Department of Regional Planning

ATTACHMENT

ORDINANCE NO. _____

An ordinance amending Title 31 – Green Building Standards Code of the Los Angeles County Code, relating to green building requirements and energy standards.

The Board of Supervisors of the County of Los Angeles ordains as follows:

SECTION 1. Section 202 **(Chapter 2 – Definitions)** of Title 31 is hereby amended to read as follows:

COOL ROOF. A roofing material with high thermal emittance and high solar reflectance, or low thermal emittance and exceptionally high solar reflectance as specified in Title 24, Part 6, California Administrative Code, that reduces heat gain through the roof.

COOL ROOF RATING COUNCIL (CRRC). A not for profit organization designated by the Commission as the Supervisory Entity with responsibility to rate and label the reflectance and emittance of roof products.

SECTION 2. Section 301.3.3 **(Chapter 3 – Green Building)** of Title 31 is hereby amended to read as follows:

301.3.3 Nonresidential buildings greater than or equal to 25,000 square feet.

In addition to the requirements of Section 301.3, any newly constructed nonresidential building greater than or equal to 25,000 square feet shall comply with all requirements of Section A5.601.2.4 Tier 1. Roofing material shall comply with Tier 2 requirements of Table A5.106.11.2.3.

Exceptions:

1. Compliance with Section A5.601.2.3 shall be voluntary
2. High-rise residential buildings of seven stories or greater shall comply with Table A4.106.5.1(~~3~~4) in lieu of Table A5.106.11.2.~~2~~3.

SECTION 3. Section 4.106.6 **(Chapter 4 – Residential Mandatory Measures)** of Title 31 is hereby added to read as follows:

4.106.6 Cool roof for reduction of heat island effect.

Roofing material shall comply with the following:

4.106.6.1 Solar Reflectance.

Roofing material shall have a minimum 3-year aged solar reflectance equal to or greater than the values specified in Table 4.106.6(1) and Table 4.106.6(2).

Solar reflectance values shall be based on the aged reflectance value of the roofing product or the equation in Section A4.106.5.1 if the CRRC testing for aged solar reflectance is not available.

4.106.6.2 Thermal Emittance.

Roofing material shall have a CRRC initial or aged thermal emittance equal to or greater than the values specified in Table 4.106.6(1) and Table 4.106.6(2).

4.106.6.3 Solar Reflectance Index Alternative.

Roofing material having a Solar Reflectance Index equal to or greater than the values specified in Table 4.106.6(1) and Table 4.106.6(2) may be used as an alternative to compliance with the 3-year aged solar reflectance and thermal emittance values.

SRI values used to comply with this section shall be calculated using the Solar Reflectance Index (SRI) Calculation Worksheet (SRI-WS) developed by the California Energy Commission or in compliance with ASTM E1980-01 as specified in the

2016 California Energy Code. Solar reflectance values used in the SRI-WS shall be based on the aged reflectance value of the roofing product or the equation in Section A4.106.5 if the CRRC certified aged solar reflectance is not available. Certified thermal emittance used in the SRI-WS may be either the initial value of the aged value listed by the CRRC.

TABLE 4.106.6(1) – LOW-RISE RESIDENTIAL BUILDINGS

ROOF SLOPE	MINIMUM 3-YEAR AGED SOLAR REFLECTANCE	THERMAL EMITTANCE	SRI
≤ 2:12	0.65	0.85	78
>2:12	0.25	0.85	20

TABLE 4.106.6(2) – HIGH-RISE RESIDENTIAL BUILDINGS, HOTELS, AND MOTELS

ROOF SLOPE	MINIMUM 3-YEAR AGED SOLAR REFLECTANCE	THERMAL EMITTANCE	SRI
≤ 2:12	0.65	0.75	78
>2:12	0.25	0.75	20

Exceptions:

1. Roof repair;
2. Roof replacement when the roof area being replaced is equal to or less than 50% of the total roof area; or
3. Installation of building-integrated photovoltaics (BIPV)
4. Installation of steep sloped roof (>2:12) in climate zone 16 on other than a low-rise multifamily building.

5. Additions resulting in less than 500 square feet of added roof area or less than 50% of the total roof area, whichever is greater.

6. Roof constructions that have a thermal mass over the roof membrane including areas of vegetated (green) roofs, weighing at least 25 pounds per square foot.

SECTION 4. Section 5.106.11 **(Chapter 5 – Nonresidential Mandatory Measures)** is hereby added to Title 31 to read as follows:

5.106.11 Cool roof for reduction of heat island effect.

Roofing material shall comply with the following:

5.106.11.1 Solar Reflectance.

Roofing material shall have a minimum 3-year aged solar reflectance equal to or greater than the values specified in Table 5.106.11.

Solar reflectance values shall be based on the aged reflectance value of the roofing product or the equation in Section A5.106.11.2.1 if the CRRC testing for aged solar reflectance is not available.

5.106.11.2 Thermal Emittance.

Roofing material shall have a CRRC initial or aged thermal emittance equal to or greater than the values specified in Table 5.106.11.

5.106.11.3 SRI Alternative.

Roofing material having an SRI equal to or greater than the values specified in Table 5.106.11 may be used as an alternative to compliance with the 3-year aged solar reflectance and thermal emittance values.

SRI values used to comply with this section shall be calculated using the SRI-WS developed by the California Energy Commission or in compliance with ASTM E1980-01 as specified in the 2016 California Energy Code. Solar reflectance values used in the SRI-WS shall be based on the aged reflectance value of the roofing product or the equation in Section A5.106.11.2.1 if the CRRC certified aged solar reflectance is not available. Certified thermal emittance used in the SRI-WS may be either the initial value of the aged value listed by the CRRC.

TABLE 5.106.11

ROOF SLOPE	MINIMUM 3-YEAR AGED SOLAR REFLECTANCE	THERMAL EMITTANCE	SRI
≤ 2:12	0.68	0.85	82
>2:12	0.28	0.85	27

Exceptions:

1. Roof repair;
2. Roof replacement when the roof area being replaced is equal to or less than 50% of the total roof area; or
3. Installation of BIPV
4. Additions resulting in less than 500 square feet of added roof area or less than 50% of the total roof area, whichever is greater.

Roof constructions that have a thermal mass over the roof membrane including areas of vegetated (Green) roofs, weighing at least 25 pounds per square foot.

SECTION 5. The provisions of this ordinance contain various changes or modifications to requirements contained in the building standards published in the California Green Building Standards Code.

Pursuant to California Health and Safety Code Sections 17958.5, 17958.7, and 18941.5, the Board of Supervisors hereby expressly finds that all of the changes and modifications to requirements contained in the building standards published in the California Green Building Standards Code, contained in this ordinance, are reasonably necessary because of local climatic, geological, or topographical conditions in the County of Los Angeles as more particularly described in the table set forth below:

GREEN BUILDING STANDARDS CODE AMENDMENTS		
CODE SECTION	**CONDITION**	**EXPLANATION**
202	Administrative	Adds definitions pertinent to cool roof requirements.
4.106.6	Climatic	Environmental resources in the County of Los Angeles are scarce due to varying and occasionally immoderate temperature and weather conditions. Adding mandatory requirements for cool roofs for all residential occupancies will achieve a greater reduction in greenhouse gases, higher efficiencies of energy, and improved environmental air quality.
5.106.11	Climatic	Environmental resources in the County of Los Angeles are scarce due to varying and occasionally immoderate temperature and weather conditions. Adding mandatory requirements for cool roofs for all non-residential occupancies will achieve a greater reduction in greenhouse gases, higher efficiencies of energy, and improved environmental air quality.

SECTION 6. The provisions of this ordinance require compliance with energy standards that are different from and more stringent than the energy standards contained in the California Energy Code.

The Board of Supervisors hereby expressly finds that the energy standards adopted in this ordinance will require buildings to be designed to consume no more energy than permitted by the California Energy Code.

SECTION 7. This ordinance shall become operative upon the approval of the energy standards contained in the ordinance by the California Energy Commission.

AGN. NO. 3

MOTION BY SUPERVISOR SHEILA KUEHL August 1, 2017

Cool Roofs Ordinance Development

Independent scientific experts from around the world have concluded that human generated greenhouse gases are contributing to the warming of our planet. Changes in the global climate are accelerating and have had widespread impacts on human and natural systems.

Changing climatic conditions will directly impact the lives of Los Angeles County residents. In addition to related risks such as extreme drought and wildfires, a 2015 report from UCLA predicts that by 2050, parts of Los Angeles County will experience up to triple or quadruple the annual number of extreme heat days, defined as 95 degrees Fahrenheit or warmer.

An urban heat island is an urban area that experiences much warmer temperatures than surrounding rural areas, and is caused primarily by absorption and radiation of heat by hardscapes such as asphalt and by dark surfaces such as roofs. These heat differentials are influenced by local weather patterns and can change on a daily or seasonal basis. The urban heat island effect experienced by many parts of Los

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Angeles County during an increasingly long hot season threatens public health and urban livability.

The effects of increased extreme heat days will disproportionately impact lower income communities located inland. These areas have far less tree cover than more affluent areas, and tend to be park poor, thus increasing their likelihood of being urban heat islands. Lower income residents are also more likely to live in older housing that lacks air conditioning, thereby making them more vulnerable to extreme heat events.

Furthermore, air quality in the South Coast Air Basin depends on temperature. Higher temperatures lead to increased smog formation and trigger an increase in emissions from power plants, as more energy is utilized to cool buildings. Taking action to mitigate the urban heat island effect will reduce energy consumption and costs, improve air quality, and save lives.

On October 6th, 2015, the Board of Supervisors made a commitment to climate resiliency by adopting the Los Angeles County Community Climate Action Plan 2020 (CCAP). The CCAP includes numerous recommendations to ensure that our region is climate resilient in the face of rising temperatures, including a recommendation that the County adopt a cool roof requirement.

A cool roof is defined as a roof that is constructed from or coated with highly reflective materials in order to increase the solar reflectance of the roof's surface. Cool roofs can absorb up to 65% less heat than conventional roofs made of dark surface materials such as asphalt, and their surface can be up to 50 degrees cooler than a traditional roof on a hot day. Widespread installation of cool roofs will lower both interior and ambient urban temperatures, and alleviate peak demand load on the electrical grid.

Cool roofs have become extremely cost effective for building owners, saving an average of 7-15%, and up to 20%, on cooling costs. Additionally, maintenance costs for cool roofs tend to be lower, and they have a longer life than conventional roofs. Materials have come down in price, and many utilities are offering generous rebates, rendering cool roofs competitive with conventional tar roofs. Materials are also now available in a greater variety of colors and styles.

The City of Los Angeles adopted a cool roof ordinance in 2014. Other local jurisdictions that have adopted cool roof ordinances include Pasadena and Santa Monica. Further afield, Sonoma County and Contra Costa County have cool roof ordinances in place. Over time, widespread adoption of cool roofs as part of a larger urban heat mitigation strategy will help to reduce urban temperatures in Los Angeles County.

The Regional Planning Commission recently recommended that the Board of Supervisors approve amendments to Title 22 planning and zoning code to allow for cool roofs in Los Angeles County. That recommendation is currently pending final Board approval. But merely allowing cool roofs is insufficient, given the gravity of the threat, the availability of superior, cost-effective alternatives, and the familiarity by local contractors and builders with cool roof materials, given that the City of Los Angeles has required cool roofs since 2014.

I, THEREFORE, MOVE that the Board of Supervisors direct the Department of Public Works, in coordination with the Department of Regional Planning, the Chief Sustainability Officer, and the Department of Public Health, to:

1. Undertake a public engagement process with interested stakeholders, including those from environmental groups, the building and roofing industries, labor

organizations, ratepayer advocates, and others, to solicit feedback on an ordinance amending the County of Los Angeles Building Code to require installation of cool roofs.

2. Draft an ordinance that would require utilization of cool roofing materials for new building construction, building additions, and major roof replacements in the unincorporated areas of Los Angeles County. The ordinance may provide for exceptions for certain types of roof repairs, photovoltaic roofs, or roof replacements of less than some to-be-determined portion of roof area.
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5. Return to the Board within 120 days with a recommended ordinance for consideration by the Board of Supervisors.

S:KY/Cool Roofs Ordinance Development